

curved. Flagellum about twice as long as the scape, the ninth joint produced strongly at the outer apical angle. Head smooth and shining; the front minutely punctured at the sides, with a shallow longitudinal sulcus which does not reach the anterior ocellus; the scape inserted on a large round prominence; face subopaque. Thorax shining, finely and distantly punctured; pronotum crenulate; notauli smooth, mesopleuræ smooth in the middle; a deep transverse groove at the base of the scutellum in which are several longitudinal striæ. Median segment rugose, with lateral marginal carinæ, the apical slope coarsely reticulate. Abdomen smooth and shining, the petiole with delicate longitudinal striæ which do not reach the apex. Valvulæ very short, considerably shorter than the first tergite; femora and tibiæ long, tarsi rather short. Radius originating a little beyond the middle of the stigma; the costal margin of the radial cell half as long as the stigma.

Hab. Ceres, Cape Province, February and March 1921 (R. E. Turner); 2 ♀ ♀.

This is not a typical *Streblocera*, the scape being smooth and rather differently shaped; but I think it may be retained in the genus.

XXXV.—*Travassosius rufus*, *gen. et sp. n.*: a Nematode (Trichostrongylidæ) parasitic in the Stomach of the Norwegian Beaver. By M. KHALIL, Ph.D. (Lond.), M.D. (Brux.), D.P.H., Hon. Parasitologist to the Zoological Society of London*.

Material.—Numerous examples of this nematode were found in the stomach of a beaver—“*Castor fiber*”—from Norway, which died at the Zoological Society's Gardens, London. The animal died on the day following its admission to the menagerie. About two weeks later a second beaver, brought from the same locality, also died. In the latter only a few specimens of the same nematode were found. In both animals the cæcum harboured numerous specimens of *Cladorchis* (*Stichorchis*) *subtriquetrus*.

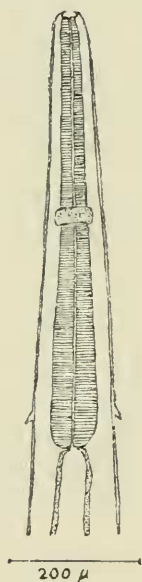
Shape of Body.—In the fresh state the parasites were

* From the Helminthological Department, London School of Tropical Medicine.

brick-red in colour, gracefully coiled, and lay in the mucus covering the surface of the stomach. The parasites are very slender. The male is 12 mm. long and 0.18 mm. in maximum diameter. The female is 13 mm. long and 0.19 mm. in maximum diameter. The body in both sexes tapers towards the head-end, and in the female towards the tail-end also. The bursa of the male is slightly broader than the rest of the body.

Cuticle.—The cuticle is longitudinally striated. There are

Fig. 1.



Cephalic end of the body of *Travassosius rufus*.

twenty equidistant longitudinal lines distributed around the circumference of the body. Close to the head the cuticle is transversally striated.

The Cephalic End.—The cephalic end is smoothly rounded. It is 0.03 mm. in diameter in both sexes. The mouth is surrounded by three ill-defined lips. There is no mouth-capsule. A small mouth-cavity leads directly into the beginning of the œsophagus (fig. 1).

Œsophagus.—The œsophagus is straight, slender, and tapering gradually towards its cephalic end. It is 0.66 mm. in length in the male and 0.68 mm. in the female. The maximum diameter of the œsophagus is at its caudal end. It is 0.08 mm. in diameter in both sexes.

Chyle Intestine.—The chyle intestine in both sexes pursues a straight course along the axis of the body. The intestinal cells are not pigmented. The rectum in the female is a

Fig. 2.



Female tail.

short narrow canal 0.08 mm. in length. The anal opening is not raised above the surface, and lies in the mid-ventral line 0.37 mm. from the tail-end (fig. 2).

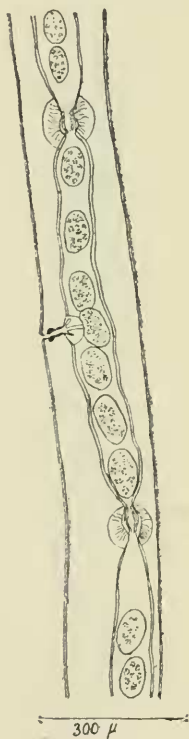
Nervous System.—The nerve-ring surrounds the œsophagus 0.32 mm. from the cephalic end in both sexes.

Excretory System.—The excretory pore passes through the cuticle in an oblique direction, running caudad from the

surface. It opens in the mid-ventral line 0.48 mm. from the cephalic end in the male and 0.49 mm. in the female.

Cervical Papillæ.—The two laterally placed cervical papillæ are stout and very conspicuous. They are short, thorn-like, with their pointed ends directed caudally. They lie in the male 0.53 mm. and in the female 0.55 mm. from

Fig. 3.



Female genitalia.

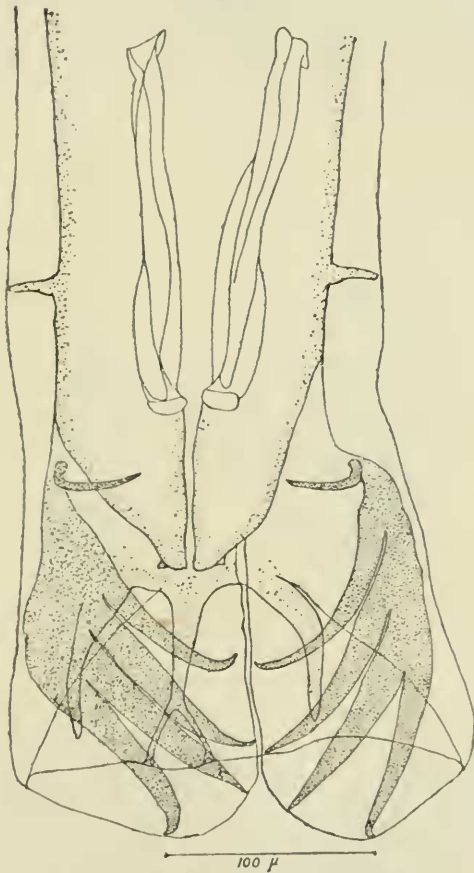
the head-end. They are a little cephalad to the bulb of the œsophagus.

Prebursal Papillæ.—The prebursal papillæ are large and conspicuous. They lie on the lateral lines 0.27 mm. from the end of the bursa. Each papilla has a rounded end; it is

cylindrical in shape, with a slightly broader base. The papillæ are 0.025 mm. in length.

Genital Organs.—Male: the testis runs for the greater part of its course along the axis of the body. There are two dilated, spindle-shaped, seminal vesicles. The cement-gland

Fig. 4.



Ventral view of male bursa and spicules.

is comparatively long, with the vas deferens piercing its whole length to open into the cloaca.

Female: there are two ovaries and two uteri, which are divergent (fig. 3). They run along the long axis of the body.

Each uterus ends in an ovejector. The vagina is very short and is surrounded with a buried cuticular ring. The vulva is not raised above the surface and opens 3.2 mm. from the tail-end.

Bursa.—The male bursa is closed all round, there being no distinct demarcation between the lateral and the dorsal lobes. The lateral lobes are frequently folded. The ventro-ventral ray is small and runs horizontally, being widely separated from the latero-ventral ray (fig. 4). The latero-ventral ray lies close to and parallel with the externo-lateral ray. Its tip is directed forwards. The trunk of the lateral rays arises

Fig. 5.



Lateral view of male bursa.

in common with the latero-ventral ray. It divides at the same level into three rays of equal thickness. The tip of the ventro-lateral ray is directed forwards. The tip of the medio-lateral ray lies at right angles to the edge of the bursa. The tip of the dorso-lateral ray is directed dorsally (fig. 5). The externo-dorsal ray arises from the dorsal ray close to its origin. It is a comparatively thick ray and ends a short distance from the edge of the bursa. The dorsal ray is thin, 0.09 mm. in length. It bifurcates in its lower 0.03 mm. into two delicate branches, each of which ends in two fine prongs at the edge of the bursa.

Genital Cone.—The genital cone is a massive structure protruding from the floor of the bursa, and having a rounded apex pierced by the cloacal canal. There is a large papilla on either side of the cloacal opening.

Spicules.—The two spicules are equal and similar. Each is 0.185 mm. in length. The cephalic extremity is cup-shaped, hollow, and has a thickened rim (fig. 6). The spicule has a groove along its ventral aspect. The caudal end is rounded, carrying a knob-like end. There is *no* accessory

Fig. 6.



Fig. 7.



Fig. 6.—Ventral aspect of one spicule.

Fig. 7.—Ovum.

piece. At the bases of the spicules there are two empty sacs, from which the spicules have been apparently protruded.

Termination of the Female.—The female tail is 0.37 mm. It ends bluntly and is not provided with papillæ.

Ova.—The ova, which are laid in the morula stage, are oval, thin-shelled, and measure 85 μ in length and 55 μ in breadth (fig. 7).

Habitat.—The stomach of the European beaver, "*Castor fiber*," Norway.

Discussion.

The only nematode parasite hitherto found in the stomach of *Castor fiber* is that recorded by Morgan in 1868. This author wrote:—"In the stomach of the beaver I have found a very fine filamentous worm 40^m in length, species unknown." It is difficult to determine the character of Morgan's parasite, but Hall has tentatively placed it in the genus *Gongylonema* because of its habitat and length. The parasite described in this paper is placed in a new genus which has been named *Travassosius*, in recognition of Dr. Travassos's work on the Trichostrongylidæ.

The genus may be defined as follows:—

Trichostrongylina: small and slender, reddish in colour in the fresh condition. Head small, with three lips. Cuticle longitudinally striated except close to the head, where it is transversely striated. Cervical papillæ prominent. Buccal cavity not well defined. Bursa with large lateral lobes without a well-developed dorsal lobe. Ventral rays widely separated, of very different thickness; the ventro-ventral is thin and directed ventrally; the latero-ventral is thick and in close relation with the lateral rays. The tip of the externo-lateral ray is directed ventrally at its tip. The medio-lateral strikes the edge of the bursa at right angles, while the postero-lateral ray has its tip directed dorsally. Dorsal ray long and slender, cleft at the end. Each bifurcation ends in two prongs. Spicules short, twisted, with a knob-like caudal end. There is no accessory piece. Prebursal papillæ large and conspicuous. Uteri divergent. Ovejectors well developed. Vulva in the posterior half of the body. Eggs of moderate size, thin-shelled, colourless, and are deposited in the morula-stage of development. Parasitic in the stomach.

Type-species, *Travassosius rufus* from the European beaver, *Castor fiber*.

The genus is allied to *Cooperia*, Ransom, 1907, being differentiated from it, however, by the following characters:— In *Cooperia* the cervical papillæ are absent, while in *Travassosius* they are present and very prominent. In *Cooperia* the dorsal lobe of the bursa is more or less distinctly separated from the lateral lobes, while in *Travassosius* there is no such separation. In *Cooperia* the externo-lateral ray turns backwards, while in *Travassosius* it turns forwards. In *Cooperia* the prebursal papillæ are absent, while in *Travassosius* they are present. In *Cooperia* each main branch of the dorsal

ray gives a small ray extending ventrally near its junction with the stem; this is absent in *Travassosius*.

REFERENCES.

- HALL, M. C. 1916. "Nematode Parasites of Mammals of the Orders Rodentia, Lagomorpha, and Hyracoidea" No. 2131 from the 'Proceedings of the United States National Museum,' vol. 1. pp. 188-189, also 231.
- MORGAN, L. H. 1868. 'The American Beaver and his Works.' Pp. xv, 17-284. 8vo, Philadelphia.
- RANSOM, B. H. 1907. "Notes on Parasitic Nematodes, including Descriptions of new Genera and Species and Observations on Life-histories." Circular 116, U.S. Department of Agriculture, Bureau of Animal Industry.
- TRAVASSOS, L. 1921. "Contributions à l'étude de la Faune helminthologique du Brésil.—XIII. Essai monographique sur la Famille des Trichostrongylidæ, Leiper, 1909." *Memorias do Instituto Oswaldo Cruz*, t. xiii. f. 1.

XXXVI.—On a new *Linguatulid* from the Adriatic.

By STANLEY HIRST.

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Alofia adriatica, sp. n.

Shape of body much the same in both sexes. It is of moderate thickness, the anterior end being narrowed, whilst the posterior end is a little enlarged, being the stoutest part of the body. Segmentation not very distinct; there are about seventy-two annulations? There is a distinct lateral line in the female. Chitinous supporting line of mouth shaped almost like a key-hole, whereas in *A. ginæ*, Giglioli, it is U-shaped. Also the distance between the two lines of hooks is much greater in the new species, and the curvature of the hooks themselves is different.

Measurements.—Length of female 21.85 mm.; width of anterior end (near hooks) 2 mm.; width of middle of body about 3 mm.; width of posterior end about 3½ mm. Length of male 19 mm.

Locality.—Adriatic; a male and a female specimen, from the Norman collection; host not given.